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10/782,130	02/19/2004	Pranabes K. Pramanik	OM-11	5237

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EXAMINER

KRUEER, KEVIN R

ART UNIT PAPER NUMBER

1773

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**BEFORE THE BOARD OF PATENT APPEALS  
AND INTERFERENCES**

Application Number: 10/782,130  
Filing Date: February 19, 2004  
Appellant(s): PRAMANIK, PRANABES K.

**MAILED**

OCT 06 2006

**GROUP 1700**

\_\_\_\_\_  
Richard Roberts  
For Appellant

**EXAMINER'S ANSWER**

This is in response to the appeal brief filed September 5, 2006 appealing from the Office action mailed February 7, 2006.

**(1) Real Party in Interest**

A statement identifying by name the real party in interest is contained in the brief.

**(2) Related Appeals and Interferences**

The examiner is not aware of any related appeals, interferences, or judicial proceedings which will directly affect or be directly affected by or have a bearing on the Board's decision in the pending appeal.

**(3) Status of Claims**

The statement of the status of claims contained in the brief is correct.

**(4) Status of Amendments After Final**

The appellant's statement of the status of amendments after final rejection contained in the brief is correct.

**(5) Summary of Claimed Subject Matter**

The summary of claimed subject matter contained in the brief is correct.

**(6) Grounds of Rejection to be Reviewed on Appeal**

The appellant's statement of the grounds of rejection to be reviewed on appeal is substantially correct. The changes are as follows: claim 44 should have been included in the rejection statement.

**(7) Claims Appendix**

The copy of the appealed claims contained in the Appendix to the brief is correct.

**(8) Evidence Relied Upon**

5003037	FENOGLIO et al	03-1991
2001/0005304A1	APPELT et al.	06-2001

**(9) Grounds of Rejection**

The following ground(s) of rejection are applicable to the appealed claims:

1. Claims 1-13, 15, 18-33, 37-42, 44, and 47 stand rejected under 35 U.S.C. 103(a) as being unpatentable over Appelt et al (US 2001/0005394A1) in view of Fenoglio et al (US 5,003,037).

Appelt teaches a capacitive element for a circuit board having improved capacitance. The structure is formed from a pair of conductive sheets having dielectric compound laminated therebetween. The dielectric component is formed of two or more dielectric sheets at least one of which is partially cured or softened followed by being fully cured or hardened. The lamination takes place by laminating a partially cured or softened sheet to at least one other sheet of dielectric material and one of the sheets of conductive material. The total thickness of the dielectric component does not exceed 4mil and preferably does not exceed 3mil (abstract) and the thickness of a single dielectric sheet does not exceed 2mils, preferably no more than 1.5mil (abstract). Said

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thickness teachings are herein understood to be sufficiently specific to read on the claimed thicknesses of claims 18-23.

In one embodiment, a sheet of polyimide is coated on each side with a layer of epoxy to form a dielectric component (paragraph 0028). Said layers may comprise a filler such as barium titanate in order to increase its dielectric constant (0030). The conductive layers may comprise copper (0028). Said capacitor has a capacitance of at least 500 pico farads per square inch (0029).

Appelt does not teach that the core layer should comprise a polyamide-imide. However, Fenoglio teaches a polyamide-imide that has a high Tg (preferably above 300C), excellent thermal stability, lower density and lower moisture uptake and is useful in the electronic industry as an interlevel dielectric for capacitors (abstract). Thus, it would have been obvious to one of ordinary skill in the art at the time the invention was made to utilize the polyamide-imide taught in Fenoglio in place of the polyimide core layer taught in Appelt. The motivation for doing so would have been that said polymer has a high Tg, excellent thermal stability, lower density, and lower moisture uptake.

With respect to claims 8, 9, and 25, Appelt teaches that the dielectric layers may comprise a filler material in order to control the dielectric component of the capacitor, but does not teach the amount of filler that should be added. However, the courts have held it is not inventive to discover the optimum or workable range by routine experimentation when the general conditions of the claimed invention are disclosed in the prior art (See MPEP 2141.05). Thus, it would have been obvious to one of ordinary skill in the art at the time the invention was made to vary the amount of filler added to

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the dielectric component of the capacitor. The motivation for doing so would have been to optimize the dielectric constant of the dielectric component.

With regard to claim 26, Appelt does not teach the epoxy should have a Tg of at least 180C. However, Fenoglio teaches it is desirable for the dielectrics of capacitors to have a high Tg (see background of the invention). Thus, it would have been obvious to utilize an epoxy with a high Tg as the thermosetting resin taught in Appelt. The motivation for doing so is that such polymers are preferable for use in capacitors.

Alternatively, since epoxy is taught to be a thermosetting composition, it is understood to inherently meet the limitation of claim 26.

#### **(10) Response to Argument**

Appellant disagrees with the examiner's determination that it would have been obvious to one of ordinary skill in the art at the time the invention was made to utilize the dielectric polyamide-imide copolymer taught in Fenoglio in place of the dielectric polyimide polymer taught in Appelt. Specifically, appellant argues the claims were amended on November 17, 2005 to exclude "central polymerizable layers" comprising polyimide or polyamide-imide. Said argument is noted but is not persuasive because the polyamide-imide copolymer taught in Fenoglio has been interpreted to read on the claimed "aromatic polyamide" Markush member. Said interpretation is supported by Appellant's admissions. Specifically, appellant parenthetically refers to a polyamide-imide polymer as a "polyamide" polymer on the top of page 12 of the response mailed 11/17/2005.

Appellant further argues that it is clear that the present claims exclude a polyimide-containing central layer. The examiner respectfully disagrees for the reasons noted above and maintains the position that polyamide-imides are within the scope of the claimed invention because appellant indicates in the 11/17/2005 response that polyamide-imides read on the claimed polyamide embodiments of the independent claims.

According to Appellant, Appelt fails to teach a multi-layered structure that comprises a central polymerizable layer of "aromatic polyamide." The examiner agrees but notes the rejection never relied upon Appelt for such a teaching. Rather, Fenoglio was relied upon to render obvious the claimed aromatic polyamide. In response to appellant's arguments against the references individually, one cannot show nonobviousness by attacking references individually where the rejections are based on combinations of references. See *In re Keller*, 642 F.2d 413, 208 USPQ 871 (CCPA 1981); *In re Merck & Co.*, 800 F.2d 1091, 231 USPQ 375 (Fed. Cir. 1986).

With regard to the combination of Appelt and Fenoglio, Appellant argues that Fenoglio does nothing more than describe the formulation of polymeric materials, and does not explain how/why the skilled artisan would modify Appelt to devise the claimed invention. The examiner respectfully disagrees. Fenoglio does more than describe the formulation of polyamide-imides. Fenoglio teaches said polyamide-imides possess high Tgs, excellent thermal stability, lower density, and lower moisture uptake (abstract). Said properties are exactly the properties the skilled artisan would desire in a good dielectric material and the properties that appellant seeks from their "central

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polymerizable layer.” Thus, Fenoglio teaches why the skilled artisan would have been motivated to utilized said polyamide-imide polymers in the laminate taught in Appelt: their high T<sub>g</sub>, thermal stability, lower density, dielectric properties, and low moisture uptake. Fenoglio further teaches that said polyamide-imides are useful in the electronic industry as inter-level dielectrics (abstract). Thus, Fenoglio teaches said polyamide-imides can be used in a similar environment as the polyimide layer taught in Appelt; it can be used as an interlevel dielectric in the electronics industry.

Appellant further argues the examiner incorrectly attempts to bridge the gap between Appelt and the present claims by considering Fenoglio’s polyamide-imide as a polyimide in the context of Appelt, yet as a polyamide in the context of the present claims. The examiner notes the polyamide-imide is understood to read on a “polyamide” in the context of the present claims because appellant’s statements of 11/17/2005 clearly indicate appellant intended for “polyamides” to be inclusive of “polyamide-imides.” The fact that polyamide-imide copolymer can also be understood to be a species of the polyimide embodiment taught in Appelt only further strengthens the showing that the claimed invention is obvious in view of the combined teachings of Appelt and Fenoglio. Furthermore, it is noted that Fenoglio clearly demonstrates the functional equivalence of polyimides, polyamides, and polyamide-imides and that the skilled artisan would have clearly been motivated to utilize any of said polymers as the dielectric layer of Appelt.

Appellant argues that the examiner in the corresponding PCT application considered all of claims to be novel and having an inventive step over the art applied in



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the current application. The examiner notes that the prosecutions of the PCT and the US application are separate and do not necessarily have to parallel one another, that the determinations in the PCT are not binding, and that the legal standards of "inventive step" and "patentability" are not necessarily identical. The examiner further notes that the arguments set forth in the PCT document and the current application were different. Specifically, there was no admission in the PCT document that polyamide-imides should be interpreted to read on the claimed "polyamide layer." Such an admission is of record in the pending application (top of page 12 of the response mailed 11/17/2005).

Therefore, the rejections are maintained.

**(11) Related Proceeding(s) Appendix**

No decision rendered by a court or the Board is identified by the examiner in the Related Appeals and Interferences section of this examiner's answer.

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For the above reasons, it is believed that the rejections should be sustained.

Respectfully submitted,

A handwritten signature in black ink, appearing to read "Kevin R. Kruer". The letters are cursive and fluid.

Kevin R. Kruer-Patent Examiner Art Unit 1773

Conferees:

A handwritten signature in black ink, appearing to read "Carol Chaney". The signature is cursive and somewhat stylized.

Carol Chaney-Supervisory Patent Examiner-Art Unit 1773

A handwritten signature in black ink, appearing to read "Jennifer Kolb-Michener". The signature is cursive and includes a long, sweeping underline.

Jennifer Kolb-Michener- Tech Center 1700 Appeal Specialist